

**THE WINSTON CHURCHILL MEMORIAL TRUST  
OF AUSTRALIA**

Report by - ANNE McGANN – 2003 Churchill Fellow

The Sir William Kilpatrick CHURCHILL FELLOWSHIP  
to study models of Vestibular Rehabilitation Clinics in the  
USA and UK.

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Signed: Anne McGann

Date: 1<sup>st</sup> July 2004

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## **INTRODUCTION & ACKNOWLEDGEMENTS**

This report details the findings of my 2003 Churchill Fellowship travels to the USA and UK to investigate the models of care provided by specialised Vestibular Clinics with emphasis on the Vestibular Rehabilitation component of these clinics.

Specific areas of study included:

- Completion of a Vestibular Rehabilitation Competency Based Course
- Diagnostic procedures in the area of Vestibular Impairments, both laboratory based and clinical bedside assessment
- Evidence Based Practice in the field of Vestibular Rehabilitation and development of management programs for this client group
- The multidisciplinary nature of Vestibular Rehabilitation teams and the roles of each within the programs offered.
- The models of care in the approach to Vestibular Rehabilitation

My travels to the USA and UK would not have been possible without:

- the financial support of the Winston Churchill Memorial Trust and in particular the Sir William Kilpatrick Fellowship
- the advisory and organisational support offered to me by the Winston Churchill Memorial Trust with particular mention of Meg Martin. Furthermore the high regard held internationally for Churchill Fellowships awarded me opportunities I am aware would not have been otherwise available
- the professional and personal support offered to me by Dr Keith Hill (PT, PhD), Co-Director of MECRS Falls & Balance Clinic and Dr Julie Bernhardt (PT, PhD); both of who inspired me to apply for a Churchill Fellowship and who supported me throughout this process and beyond the doors of success. Ms Kate Murray (PT) also played an enormous supportive role in this process
- the overwhelming welcome and opportunities offered to me by those experts in the field of Vestibular Rehabilitation of whom I was honored to visit and observe at work during my travels through the USA and UK. They were incredibly generous and open in their sharing of skills, knowledge and offer of future support in this field
- the support of my professional colleagues and fellow physiotherapists at Melbourne Extended Care & Rehabilitation (MECRS). Their enthusiasm for the opportunity offered me prior to departure and for the knowledge gained on my return has aided me in maintaining a high level of enthusiasm and drive in my endeavour to commence a Vestibular Rehabilitation Service at MECRS
- my family and partner Mat; all of whom applauded my success in being awarded a Churchill Fellowship and who over the long miles separated, provided me with invaluable support and “companionship” throughout my travels

## EXECUTIVE SUMMARY

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### Project Description

To investigate the models of care and best practice management of people with vestibular deficits. This was achieved through visiting world renowned Vestibular Clinics in the USA and UK. The objective was to return to Melbourne to set up a Public Health Vestibular Rehabilitation Service at MECRS, Melbourne Health.

### Project Highlights

1. ***Vestibular Rehabilitation: Competency Based Course*** – a 5day theory & competency course undertaken at Emory University Atlanta Georgia USA.
2. ***Johns Hopkins Medicine – Vestibular Clinic*** – observed the work of Dr Richard Clendaniel (PT PhD) in the Balance and Vestibular Rehabilitation Clinic in Baltimore, Maryland USA
3. ***Centre for Dizziness & Balance Disorders, Emory University*** – 5 day observation of the work of renowned clinicians Dr. Susan Herdman (PT PhD) and Dr. Ron Tusa (MD PhD) in their clinic in Atlanta Georgia USA
4. ***Pittsburgh University Medical Centre: Vestibular Rehabilitation Program*** Clinical observation of Dr Sue Whitney (PT PhD) & Laura Morris (PT) - USA
5. ***New York University Medical Centre Vestibular Rehabilitation Centre*** - Tara Denham (PT). The largest Vestibular Rehabilitation Clinic in the USA. Observation of clinicians' assessment & prescription of Vestibular Rehabilitation program - USA
6. ***National Hospital for Neurology & Neurosurgery***– Professor Linda Luxon. Neuro-Otology Diagnostic Clinics & group approach to Vestibular Rehab - London UK
7. ***Meeting renowned experts in the field*** – and receiving their ongoing support

### Learnings & Conclusions

The knowledge base and clinical skills gained by undertaking the Vestibular Rehabilitation course is invaluable both as a clinician and in my endeavours to set up a Vestibular Rehabilitation service. The overriding conclusions are that there is a clinical need and there is evidence to support that Vestibular Rehabilitation is effective. The knowledge of the various models of Vestibular Rehabilitation Clinics in both the USA and UK provides an excellent basis to commence development and implementation of a model for a Public Health Vestibular Rehabilitation Service (VRS) in Melbourne Health. This service commenced on Tues 25<sup>th</sup> May 2004 at MECRS and in its initial stages provides a 1 day/week Rehabilitation Service. The rehab service aligns itself with the USA model of care incorporating modifications to allow for lack of diagnostic services onsite.

The *dissemination* of the information gained has already commenced and the current ongoing program includes presentations up to September 04.

*Written material* includes an article in both the Australian Physiotherapy Association (APA) Newsletter and The Melbourne Health Newsletter prior to departure. An article will also appear in the Melbourne Health Newsletter in the next quarter.

*Presentations* include 3x 1hr presentations to Medical audiences across Metro Health Networks, 3x theory and practical educational sessions with physiotherapy staff across Metro Health Networks, 2x presentations to a multidisciplinary audience including the Victorian Falls & Balance Coalition Group and assisting in the instruction of the APA Vestibular Rehabilitation Introductory Weekend Course (Physiotherapy).

*Undergraduate Education:* ongoing teaching responsibilities include incorporating VRS observation into undergraduate physiotherapy student schedules.

## **PROGRAMME**

### **March 1<sup>st</sup> – March 5<sup>th</sup> Baltimore, Maryland USA**

- Johns Hopkins Medicine: Dept of Otolaryngology.
- Key Contact: Dr. Richard Clendaniel (PT PhD)
  - Observing the clinical work of Assistant Professor of Vestibular Rehabilitation Dr. Richard Clendaniel (PT PhD)
  - Visited the vestibular research laboratories and discussed current animal research studies
  - Observed diagnostic assessments by Consultant Neurologist Dr D Zee.
  - Observed diagnosis and management of patients with various presentations attending the ENT Outpatient department

### **March 9<sup>th</sup> – 13<sup>th</sup> Emory University Atlanta, Georgia USA**

- Vestibular Rehabilitation-A Competency-Based Course  
See Course program APPENDIX A

### **March 15<sup>th</sup> – 19<sup>th</sup> Emory University Atlanta, Georgia USA**

- Emory University, School of Medicine: Centre for Dizziness and Balance Disorders
- Key Contact: Dr Susan Herdman (PT PhD)
  - Observed laboratory vestibular testing: rotary chair, caloric tests, VEMPs, SVV
  - Observed Physiotherapy clinical assessment and treatment of Vestibular clients
  - Observed Medical Assessment of Vestibular Clients – Dr Ron Tusa

### **March 22<sup>nd</sup> – 26<sup>th</sup> Pittsburgh, Pennsylvania USA**

- University of Pittsburgh Medical Centre: Balance Centre
- Key Contact: Dr Sue Whitney (PT PhD)
  - Attended and observed Vestibular Rehabilitation Program with Director Laura Morris (PT)
  - Attended and observed management of inpatients requiring Vestibular consultation
  - Viewed and discussed current onsite research into the area of the use of virtual reality in Vestibular Rehabilitation
  - Attended Grand Rounds and Medical Journal Meetings with Vestibular Specialists (MDs)
  - Attended and observed clinical work of Dr Sue Whitney in an Outreach Centre.
  - Observed the medical assessment & diagnosis clinic of Dr Joseph Furman, Neurologist

### **March 29<sup>th</sup> – April 1<sup>st</sup> New York USA**

- Vestibular Rehabilitation Clinic Rusk Institute of Rehabilitation Medicine, New York University Medical Centre
- Key Contact: Ms Tara Denham (PT)
  - Attended and viewed the clinical assessments and treatments delivered by the Vestibular Rehabilitation therapists in the largest Vestibular Rehabilitation Clinic in USA: 9 full time Physiotherapists

- Attended and assisted in the delivery of a lecture to the Physical Therapy undergraduates at Tauru College NY with David Malamut (PT) "Balance Assessment"

#### **April 5<sup>th</sup> Charing Cross Hospital London UK**

- Neuro-Otology/Vestibular Clinic
- Key Contact: Professor Aldofo Bronstein
  - Observed the medical diagnostic clinic
  - Observed laboratory vestibular testing: caloric tests

*Easter break April 8<sup>th</sup> – 13<sup>th</sup>*

#### **April 15<sup>th</sup> Southampton UK**

- University of Southampton
  - Met with Dr. Lucy Yardley renowned and well published Clinical Psychologist in the area of Vestibular Rehabilitation

#### **April 19<sup>th</sup> – 21<sup>st</sup> Queens Square London UK**

- National Neurology and Neurosurgery, University College Hospitals: Neuro-Otology Clinics
- Key Contact: Professor Linda Luxon
  - Observed audiology assessment of Vestibular clients
  - Observed medical assessment and diagnosis at Vestibular Clinic
  - Observed Cognitive Behavioural Therapy sessions with Vestibular clients
  - Observed physiotherapists group work with Vestibular clients based on the Cawthorne & Cooksey vestibular exercises (Cawthorne 1945, Cooksey 1945)
  - Attended medical team case presentation and discussion

## Main Body of Report

### **Background**

Dizziness is a difficult problem to diagnose, particularly in the older population. This is due in part to the many potential causes of dizziness (Katsarkis 1994). A recent review of specialty Falls & Balance Clinics in Victoria found that 33% of fallers presenting to these clinics reported dizziness as a symptom. On further assessment 28% of fallers had vestibular deficits (Murray 2003).

In the wider community, dizziness is the No. 1 reason for people >75yrs to seek medical assistance (Kroenke & Mangelsdorff, 1989, Sloane & Dallara 1999)

The vestibular system is the inner ear sensory system, which provides us with our sense of balance and movement. Vestibular disorders cause a number of symptoms including dizziness, vertigo, unsteadiness and nausea (Shumway-Cook & Horak 1990) Almost 20% of people over the age of 60yrs suffer significant dizziness at least once a year (Sloane et al 1989). The peripheral vestibular condition Benign Paroxysmal Positional Vertigo (BPPV) is identified as the single most common cause of dizziness in people > 70yrs (Sloane et al 1989). Vestibular conditions are also strongly related to falls in the older population (Herdman et al 2000). Falls are a well known major public health issue with one in three Australians over 65yrs experiencing a fall every year which is estimated to cost \$AU406 million annually (Murray NARI 2003).

The good news is that there is help available to people with Vestibular disorders. There is an increasing amount of evidence to support that Vestibular Rehabilitation is effective in the treatment of Vestibular impairments. (Herdman 1997, Herdman 1998; Horak et al, 1992; Szturm et al 1994; Herdman et al 2003; Yardley et al 1998). In the management of the above-mentioned condition BPPV, there is reported successful alleviation of condition/symptoms with a single treatment in 85-90% of cases (Herdman et al 1993). This type of service requires trained skills in the diagnosis and management of these conditions and Vestibular Rehabilitation Clinics and clinicians with these skills can be difficult to locate. The majority of therapists providing this specialised service are Physiotherapists.

In Victoria there are a number of Health Organisations that provide a formal Vestibular Service however many of them are *Diagnostic* services only and do not offer the Vestibular Rehabilitation component of the service. Others do provide a rehabilitation service but may not be readily accessible to public health clients due to service location, catchment areas ([www.dhs.vic.gov.au/about.htm](http://www.dhs.vic.gov.au/about.htm)) or provision by the Private Health Sector. Given the prevalence of vestibular disorders in an ageing population, there is a growing need for this service provision to be made widely available.

The Australian Physiotherapy Association (APA) Victoria Branch ([www.physiotherapy.asn.au](http://www.physiotherapy.asn.au)) in conjunction with Cedar Court Private Hospital, Melbourne, runs an introductory Vestibular Rehabilitation Course each year. There are also occasions for invited international speakers, however the opportunity for further education and skill development in this area is not widely available in Australia. My Fellowship was to visit the internationally renowned Vestibular Clinics in the USA and UK, complete a competency course in the USA and return to Melbourne to set up a

Public Health Vestibular Rehabilitation Service at Melbourne Extended Care & Rehabilitation Service (MECRS), Melbourne Health ([www.mh.org.au](http://www.mh.org.au)).

In the USA the Health System is based on private funds, insurance, Medicare or Medicaid. The UK National Health System (NHS) aligns itself better with the Australian Public Health Medicare System, however the purpose for visiting these two countries was to visit the centres of excellence for Vestibular Rehabilitation rather than to study the Health System framework in which they were located.

### **Summary of Clinics:**

The clinics visited were chosen based on their known field expertise, research publications and advice from local experts.

**NAME** Johns Hopkins Medicine: Vestibular Rehabilitation

**LOCATION:** Johns Hopkins Medicine, Baltimore Maryland USA

**CONTACT:** Dr Richard Clendaniel, Assistant Professor

**Referral Source:** Internal & External. If internal, clients will have been referred with laboratory vestibular tests already performed

External referrals: Primary Care Practitioners (PCP) i.e. GPs

**Population definition:** Fallers, all ages, vestibular disorders, head injuries

#### **DIAGNOSTIC:**

**Process through clinic:** Referred to Drs with diagnosis of dizziness or a Vestibular query. Drs assess then refer for laboratory tests +/- refer on for Vestibular Rehabilitation (VR).

**Investigations on site:** ENG - calorics, rotary chair, posturography

**Multidisciplinary Team:** Medical and Physio. Audiologists offsite

**Geographic layout:** Drs & physio work in same rooms, laboratory investigations in same area

**Unique to this Clinic:** High expertise and well regarded. Well known Dizziness Centre. Referrals come from all over USA. ENT. Current research: Menieres, migraine associated vestibular symptoms

#### **REHAB:**

3 days week, 1 Physio. If external referral occasionally tests not performed so if diagnosis not clear Physio advises referrer to request tests. Physician must order tests, a physio cannot.

Refer out to convenient Physio departments but with a Home Exercise Program (HEP) and advice re program. Will schedule follow up if required

**Equipment:** Frenzel glasses, Snellen Visual Acuity chart

**Programs:** no group sessions, all 1 therapist:1client (1:1) therapy customised individual programs, frequency of visits dependent upon ease of access to Johns Hopkins as many out of state referrals

**NAME:** Emory Dizziness & Balance Clinic  
**LOCATION:** Emory University, Atlanta, Georgia USA  
**CONTACT:** Dr Susan Herdman (PT PhD)  
**Referral Source:** Primary Care Practitioners (PCPs) i.e. GPs, ENT, Neurologists referring for specialist opinion.  
**Population definition:** fallers, all ages, neurological conditions, vestibular disorders  
**DIAGNOSTIC:**  
**Process through clinic:** Referral through to Drs. Dr requests laboratory & posturography tests, and receives results in same session. Refer for audiology. Refer on to physio for VR as required  
**Investigations on site:** full ENG battery calorics, Rotary chair, SVV, VEMPS, Ecog, posturography  
**Multidisciplinary Team:** x2 Neurologists, x3 Physios, x2 lab technicians, Audiologists off site. Refer offsite to Occupational Therapist (OT) as required.  
**Geographic layout:** team, laboratory and therapy all on same floor  
**Unique to this Clinic:** Neurologist specialists, pioneers in area, research: frequent publications, editors of gold standard text  
**REHAB:**  
5 days week 1 full time Physio and x2 part time physio  
**Equipment:** Frenzel glasses with video. Laboratory set up  
**Programs:** no group sessions 1:1 customised individual sessions. Attendance up to x2 weekly

**NAME:** Vestibular Rehabilitation Program, Balance Centre, Pittsburgh University Medical Centre (PUMC)  
**LOCATION:** PUMC, Pittsburg, Pennsylvania USA  
**CONTACT:** Dr Susan Whitney (PT PhD)  
**Referral Source:** External: PCP, ENT, Neurologists Internal: ENT, Neurologist, Emergency Department  
**Population definition:** fallers, all ages, neurological conditions, vestibular disorders  
**DIAGNOSTIC:**  
**Process through clinic:** referral to Dr. Dr requests laboratory investigations  
**Investigations on site:** Rotary, calorics, posturography  
**Multidisciplinary Team:** Neurologists Dr Joe Furman, x3 Physios, audiologists, Nurse, research technicians Refer out to OTs  
**Geographic layout:** laboratory and therapy on same floor, Neurologist clinics downstairs  
**Unique to this Clinic:** Audiology onsite, Current research: virtual reality. Nurse in team.  
**REHAB:**  
1 fulltime Physio, x2 part time Physios.  
**Equipment:** Frenzel with video, posturography performed by physio as required.  
**Programs:** No groups, 1:1 customised program

**NAME:** Vestibular Rehabilitation Program NYU  
**LOCATION:** RUSK Institute NYU New York USA  
**CONTACT:** Tara Denham (PT)  
**Referral Source:** Internal and External. Medical: PCP, Neurologist, ENT  
**Population definition:** all ages, fallers, central & peripheral vestibular disorders, head injuries  
**REHAB:**  
**Process through clinic:** medical referral to therapy, physiotherapy assessment and program development and HEP, review dates.  
**Investigations on site:** posturography.  
**Multidisciplinary Team:** x9 Physios. Referral out to other specialists  
**Geographic layout:** large wide gait area with 3 treatment rooms and two posturography platforms  
**Unique to this Clinic:** largest Vestibular Rehabilitation service in USA: 9 specialised physiotherapists. Oculomotor assessment skills. Some objective measures developed in this clinic. Well developed advanced Vestibular exercises  
**Equipment:** Frenzel glasses and video set up. Posturography  
**Programs:** 1:1 customised programs. 5-8 week programs

**NAME:** Neuro-Otology Clinic  
**LOCATION:** Charing Cross Hospital, London UK  
**CONTACT:** Professor Aldolfo Bronstein (MD, PhD)  
**Referral Source:** Internal & External Medical referral for expert review and management  
**Population definition:** all ages, fallers, central and peripheral vestibular conditions  
**DIAGNOSTIC:**  
**Process through clinic:** Referral to Specialist Clinic. Medical Assessment and referral for further laboratory investigations. Treatment of some conditions performed by Medical staff.  
**Investigations on site:** calorics, rotary chair, audiology  
**Multidisciplinary Team:** Medical, audiology, research & lab assistants  
**Geographic layout:** Medical clinical Rms in same building as lab  
**Unique to this Clinic:** no strong Vestibular Rehabilitation Service links. Laboratory involved in a lot of Research. Drs perform treatment for BPPV.  
**REHAB:** No

**NAME:** Neuro-Otology Clinic  
**LOCATION:** National Hospital for Neurology and Neurosurgery Hospital, Queens Square, London UK  
**CONTACT:** Professor Linda Luxon (MD)  
**Referral Source:** Internal & External Medical referral for expert review and management  
**Population definition:** all ages, fallers, central and peripheral vestibular conditions  
**DIAGNOSTIC:**  
**Process through clinic:** referral to Specialist clinic. Medical assessment and referral for lab investigations. Results received in same session  
**Investigations on site:** calorics, rotary chair, audiology, posturography

**Multidisciplinary Team:** Medical, Behavioural Therapist, audiologist, nurse.

**Geographic layout:** Medical diagnostic rooms and laboratory in same area.

Physiotherapy Services above

**Unique to this Clinic:** Behavioural Therapist, Physiotherapy not part of clinic but referred to from clinic.

**REHAB:**

Referral to Physiotherapy Department. Vestibular clients are a component of a physiotherapist's caseload, not a full caseload.

**Equipment:**

**Programs:** Group education and therapy sessions. 1:1 customised approach as required.

## USA

Four Vestibular Clinics were visited in the USA (refer to Program) and of these, three clinics offered both Diagnostic and therapy or Vestibular Rehabilitation services (refer to summary of clinics). There are advantages to this combined set up; the therapist has immediate access to laboratory investigations and diagnostic results with the onsite support of Medical staff. There is a reduction in waiting time between investigations and therapy and strong multidisciplinary ties. The one clinic geographically separated from the lab and medical investigations was RUSK Institute NY. The number of specialized therapists in the clinic appeared to provide strong professional support.

As a Physiotherapist, my main interest was to view the Vestibular Rehabilitation component of these clinics i.e. their models of care, specialised assessment, treatments and the programs offered.

The USA model of care across the four rehabilitation services was consistently a 1:1 approach. There were no group programs offered. The therapist must receive a referral from a medical practitioner as direct access to a physiotherapist as a primary diagnostician is not currently available. This is under review across the USA at this time. Depending on the source of the referral, the client may have already undergone a series of Vestibular testing and have a diagnosis. Each centre offered/had a comprehensive physiotherapist assessment which incorporated objective clinical balance and vestibular measures and a number of subjective, psychomotor and handicap measures. A treatment plan was developed from this assessment and in the majority of cases the client would be sent home with a home exercise program (HEP) and a review date. In some instances the distances traveled to these specialist clinics impacted on the frequency of reviews scheduled. This consideration aside, the standard program would be one or two weekly reviews with progression/modification of the HEP dependent upon the client presentation at each session. Appointments were about 45-60mins long and this was recognised by insurance companies as a requirement for the management of these conditions. Discharge would be based upon client symptoms and their ability to self-manage and continue to manage their own therapy to maximise recovery. There may be a further review 6months later to assess the longer term efficacy of the treatment and monitor possible decompensation i.e. further brief attacks of a client's symptoms.

I had also registered to undertake the "Vestibular Rehabilitation: A Competency Based Course" whilst in the USA (see Program). This course was co-sponsored by Emory University in conjunction with the American Physical Therapy Association (APTA) and

was directed by Dr Susan Herdman (PT, PhD) and Dr Richard Clendaniel (PT, PHD). The content of the course (see Appendix A) included a theory and evidence based practice approach along with a practical skills component. Assessment was based on theory exams and competency assessment of the practical component. I passed both. This course was an excellent and thorough introduction into the area of diagnosis and management of vestibular impairments and the opportunity offered to consolidate this information during my visit to Vestibular Clinics across the country was enormously appreciated.

## **UK**

I visited two Vestibular Clinics in the UK (refer to Program). They were diagnostic clinics of which only one was directly associated with a Vestibular Rehabilitation Service.

At the National Hospital for Neurology and Neurosurgery, the clients attended the diagnostic clinic and were then referred on as appropriate to the Vestibular Rehabilitation service offered by the Physiotherapy Department within the same organisation. The Vestibular Rehabilitation Service was offered by physiotherapists skilled & working in this area. The programs offered were group education and exercise sessions with or without 1:1 follow up with the physiotherapist some weeks later. The Medical Specialists in the Diagnostic Clinic screened the clients for group sessions.

The Group sessions were based on the Cawthorne Cooksey model of habituation exercises (Cawthorne 1945, Cooksey 1945). The sessions were run by a physiotherapist and group sizes were limited to 4-6 due to the potential symptomatic responses to this approach. A HEP would be developed at the end of the class and a review date with a physiotherapist would be given some 6 weeks later. At this time the need for 1:1 approach would be assessed.

I also visited Dr Lucy Yardley at the University of Southampton. Dr Yardley is well published in the field of Vestibular Rehabilitation and comes from a background in Psychology. Dr Yardley no longer has a clinical role, however is involved in large clinical trials across UK and Europe in the area of Falls Prevention. I spent time talking to Dr Yardley re her experience in the area of Vestibular Rehabilitation and the role of Cognitive Behavioural Therapy (CBT) in this field. My aim was to bring her ideas back to our department where we have access to Clinical Psychology through our Falls & Balance Clinic at MECRS. Due to the prevalence of these conditions and the paucity of Specialist Clinics in the UK, Dr Yardley has also been involved in a more primary access approach to Vestibular Rehabilitation in the community This approach involved upskilling of community health clinicians e.g. District Nurses who could set up programs/HEPs as required during the course of their work (Yardley et al, 1998).

## **Diagnostic Clinics:**

Clinical Tests were utilised in all the diagnostic clinics and assisted the clinician in their diagnosis and need for referral for vestibular laboratory tests. Clinical Tests used widely included Oculomotor Assessment (Herdman ed 2000), Head Thrust Test (Schubert et al

2004) Dix-Hallpike Test (Dix & Hallpike 1952) and a battery of standard balance measures.

There is currently a standard battery of Laboratory Vestibular Tests used internationally. These include Electronystagmography (ENG) testing including caloric and Rotary Chair along with auditory tests (Baloh et al 1989). Posturography (Coogler et al 1992, [www.onbalance.com](http://www.onbalance.com)) was also a standard test and although not vestibular specific it added to the diagnostic picture and was widely used.

Laboratory testing requires expensive equipment and in the USA utilisation of such equipment could be influenced by insurance reimbursements. Further vestibular laboratory tests have been developed but as yet are not widely utilised e.g. Subjective Visual Vertical (SVV) and Vestibular Evoked Myogenic Potential (VEMP).

The battery of clinical and laboratory tests appeared consistent across the USA and UK. The results of these tests were central in the development of a vestibular rehabilitation program and would be utilized by therapists to direct their rehab approach.

### **Rehabilitation Clinics:**

All Rehabilitation clinics and services were physiotherapy directed. The USA and UK varied in their models of care however I must highlight that I visited only one Vestibular Rehabilitation service in the UK and therefore my observations reflect only this one service and possibly not all models of care provided by other Vestibular Rehabilitation services throughout the UK.

Based on my observations of four Vestibular Rehabilitation services visited in the US the American approach was strongly an individual customised approach to care. Clients were assessed, and with the aid of diagnosis and presenting symptoms, given a customised program and reviewed as required. The principle was education re their condition and the skills required for self-management to and maximise potential recovery and/or symptom control.

The one Vestibular Rehabilitation service observed in the UK appeared to have more of an habituation of symptom approach where clients were given a program (HEP) to manage/reduce symptoms and then be followed up with 1:1 therapy option. Habituation of symptoms has been found to be effective in a number of vestibular conditions (Strupp et al 1998). This approach could be seen as a screening process to ensure that only those requiring 1:1 therapy are offered this model of care whilst ensuring that an effective treatment option is delivered to those who do not require the more resource intensive approach. The primary access delivery of Vestibular Rehabilitation as researched by Dr Yardley (Yardley et al 1998) also utilised the habituation approach to symptom management and found this to be effective.

## CONCLUSIONS

### ***Need:***

- With an ageing population and published data of high prevalence rates for some vestibular conditions e.g. BPPV there is a clear need for Vestibular Rehabilitation services/skills to meet this need.

### ***Population:***

- Vestibular deficits are caused by a number of injuries, medical and surgical conditions.
- Vestibular deficits occur in all age groups with some conditions increasing in prevalence with age
- Clients presenting with vestibular deficits are often very complex in terms of both diagnosis and management
- Clients can present with more than one vestibular condition simultaneously

### ***Effective:***

- There is a growing abundance of evidence to support that Vestibular Rehabilitation is effective across many vestibular conditions. The more effective programs rely on accurate and skilled diagnosis and rehab management

### ***Specialty:***

- This is a Specialist area for both the diagnosis and management of these clients. Not all ENTs or Neurologists have an interest or skill in this field as was demonstrated by referral patterns internationally.

### ***Investigations:***

- There are internationally recognised, standard laboratory tests of vestibular function
- There are internationally recognised standard clinical/bedside tests of vestibular function

### ***Education:***

*There is a need to:*

- educate own profession i.e. physiotherapists, re vestibular conditions, diagnosis and rehab management
- educate the medical profession e.g. GPs, Emergency Depts
- educate clients re their own conditions and self-management of their symptoms

### ***Rehabilitation Model of Care:***

- USA approach is clear diagnostic with 1:1 therapy to develop customized program.
- UK approach diagnostic with advisory therapy with/without 1:1 therapy approach.
- Group education and therapy sessions may be an appropriate approach for larger services
- Some conditions e.g. BPPV can be managed diagnosed and treated in a clinic without laboratory tests NOTE: if other neurological signs present there is a need to refer on for neurological assessment.

## **Dissemination:**

The framework for which I have scheduled my presentations and education sessions is based upon the perceived need to:

- inform health professionals of the effectiveness of Vestibular Rehabilitation
- educate medical staff re prevalence of vestibular deficits
- educate and upskill own profession: physiotherapists at undergraduate and post graduate level

### Activities/Programme:

- APA Newsletter prior to departure
  - Audience: Physiotherapy Professional Association members
  - Title: “Anne a Churchill winner”
  - Objective: inform my profession of the Churchill Fellowship and the objective of my proposed trip.
- 12<sup>th</sup> May (1 hour) MECRS Medical Meeting
  - Audience: Medical staff Melbourne Health
  - Title: “A tale of the Dizzy Churchill Fellowship Travels: Vestibular Rehabilitation – an International Angle
  - Objective: inform Drs of prevalence of Vestibular conditions, diagnostic tests and evidence to support Vestibular Rehabilitation
- 18<sup>th</sup> June (1 hour) Grand Round Western Hospital
  - Audience: Medical staff Western Health
  - Title: “Demystifying Dizziness”
  - Objective: inform Drs of prevalence of Vestibular conditions, diagnostic tests and evidence to support Vestibular Rehabilitation
- 24<sup>th</sup> June (1 hour) Physiotherapy Inservice
  - Audience: Physiotherapy Staff MECRS
  - Title: “From the Dizzy Heights of the Empire State Building to Treatment Rm A: Vestibular Rehabilitation.”
  - Objective: theoretical introduction to Vestibular diagnosis and rehabilitation
- 8<sup>th</sup> July MECRS: MECRS Allied Health Forum
  - Audience: Multidisciplinary Allied Health
  - Title: “Returning from the Churchill Fellowship Travels”
  - Objective: inform colleagues of the Churchill Fellowship process opportunities and report back on my travels, findings and future directions
- 15<sup>th</sup> July (1 hour) Western Hospital Physiotherapy Inservice
  - Audience: Physiotherapy Staff Western Hospital
  - Title: Practical Session Vestibular Rehabilitation: Assessment and Management Skills
  - Objective: Follow up to the theory component with demonstration and training of bedside/clinical assessment and rehabilitation principles

- 16<sup>th</sup> July Falls & Balance Clinics Coalition
  - Audience: Multidisciplinary clinicians from Falls & Balance Clinics across Victoria
  - Title: “Overseas experiences with Vestibular Rehabilitation Clinics”
  - Objective: Report to the Victorian Falls & Balance Clinics the models of Vestibular Rehabilitation Clinics and raise discussion for strategic planning of services in this field.
  
- 31<sup>st</sup> July MECRS 150<sup>th</sup> Conference
  - Audience: Medical staff attending conference from around Australia
  - Title: “The dizzy client: assessment and rehabilitation”
  - Objective: inform Drs of prevalence of Vestibular conditions, diagnostic tests and evidence to support Vestibular Rehabilitation
  
- 26<sup>th</sup> August (1 hour) MECRS Physiotherapy Inservice
  - Audience: MECRS Physiotherapy Staff
  - Title: Vestibular Rehabilitation: Assessment & Treatment Skills
  - Objective: Follow up to the theory component with demonstration and training of bedside/clinical assessment and prescription of rehabilitation program
  
- 4<sup>th</sup>/5<sup>th</sup> Sept APA Weekend Professional Development course
  - Audience: Physiotherapists
  - Title: An Introduction to Vestibular Rehabilitation
  - Objective: educate qualified Physiotherapists in the theory, diagnosis and rehabilitation of clients with Vestibular deficits

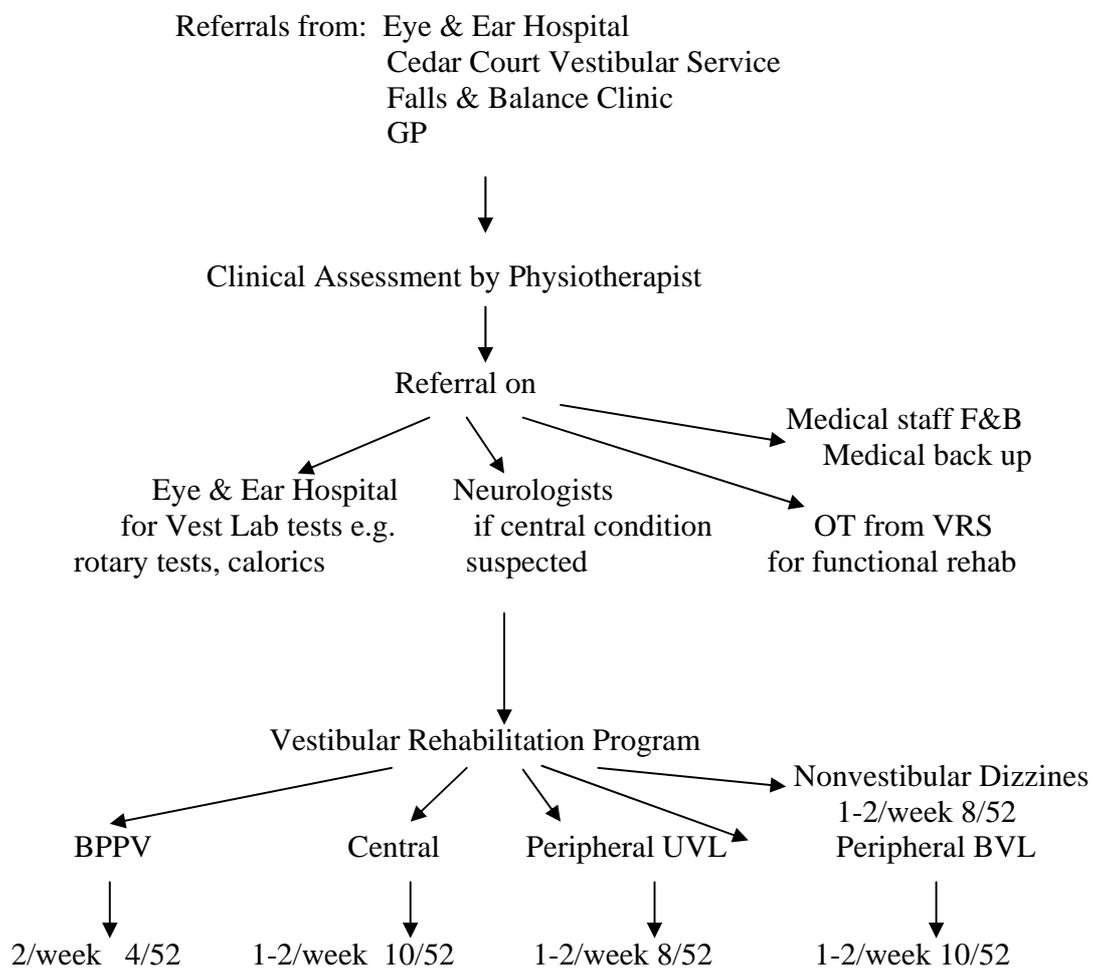
## RECOMMENDATIONS

### *MECRS Vestibular Rehabilitation Service*

- Set up a Vestibular Rehabilitation Service (VRS) at MECRS Melbourne Health. Keep it simple and therapy based. Develop links with diagnostic services in other Health Organisations. A *Diagnostic Vestibular Service* is currently under development at Royal Melbourne Hospital, Melbourne Health and will have close ties with the MECRS VRS through Research and clinical activity

MECRS Model flowchart: Current framework for clinical policy and procedure development

Considerations: Health Network Catchment areas ([www.dhs.vic.gov.au](http://www.dhs.vic.gov.au) )



→ Discharged with HEP that enables them to continue to improve and once patient is independent in tools required to foster maximal recovery.

The Rehabilitation model developed aligns itself more with the USA models of care with modifications to allow for the limitations within our Public Health system e.g. laboratory investigations and diagnostic services currently dependent upon referrals to specialist services outside Melbourne Health

### ***Professional Upskilling:***

- Develop framework for upskilling clinicians in this field in both the area of assessment/diagnosis and treatment of vestibular deficits:  
specialty services → upskill clinicians → incorporate new skills into  
with an education role regular treatment regimes  
e.g. Balance therapy
- Reduce need for specialist rehabilitation services as profession increase expertise and skills in this field
- Balance therapy services need upskilling in this area
- Utilise connections with undergraduate physiotherapy program at Melbourne University to develop Vestibular program at this level
- Now involved as an instructor on the APA Introduction to Vestibular Rehabilitation Course

### ***Educate:***

- Educate Medical profession re vestibular conditions e.g. BPPV: current series of lectures
- Educate referral sources
- Promote Vestibular Diagnosis & Management as an important health issue via conference abstracts, supporting relevant conferences, joining associated associations

### ***Equipment:***

- Equipment: Frenzels glasses or Infrared glasses with video,
- Educational material:
  - posters, models, brochures re Vestibular Conditions
  - Self management brochures
  - Exercise programs
  - Explanation of conditions

### ***Vestibular Expert Contact and support:***

- Make contact with Australian experts in the field:
  - Physiotherapist Professor Marge Sharpe (Sydney)
  - ENT Neurologist Professor G Halmagyi MD (Sydney)
- APA list of Vestibular trained physiotherapists
- Keep in contact with regional trained Physiotherapists e.g. New Zealand Singapore – Physios also registered on Atlanta course USA
- Keep in contact with international specialists: email, update with progress of VRS
- Place my name on international vestibular lists
- Develop links with local professionals e.g. ENT, audiologists, Neurologists,
- Develop links with external Vestibular Services

### ***Keep Updated:***

- Keep up with research in area: USA Neuro PT Group, electronic library, international contacts, local research e.g. Eye & Ear Hospital, NARI, RMH research into Parkinson's Disease and Vestibular Rehabilitation

## **BIBLIOGRAPHY**

- Baloh RW, Sloane PD, Honrubia V (1989) "Quantitative vestibular function testing in elderly patients with dizziness" *Ear Nose & Throat J* 68(12): 935-939
- Brandt T, Steddin S, Daroff RB (1994) "Therapy for benign paroxysmal positional vertigo revisited" *Neurology* 44: 796-800
- Cawthorne TE (1945) "Vestibular injuries" *Proceedings of the Royal Society of Medicine* 39: 270-273
- Coogler CE, Catlin PA, Bruno L (1992) "Consistency of human postural responses as measured by Equitest" In *Posture & Gait: Control Mechanisms XI International Symposium of the Society for Postural & Gait Research* p361-364
- Cooksey FS (1945) "Rehabilitation in vestibular injuries" *Proceedings of the Royal Society of Medicine* 39: 273-275
- Dix R, & Hallpike CS (1952) "The pathology, symptomatology and diagnosis of certain common disorders of the vestibular system" *Ann Otol Rhinol Laryngol* 6: 987
- Herdman S, Tusa R, Zee D, Proctor LR, Mattox DE (1993) : Single treatment approaches to benign paroxysmal positional vertigo" *Arch Otolaryngology Head Neck Surgery* 119: 450-454
- Herdman SJ (1997) "Advances in the treatment of Vestibular Disorders" *Physical Therapy* 77 (6) 602-618
- Herdman SJ (1998) "Role of vestibular adaptation in vestibular rehabilitation" *Otolaryngology Head and Neck Surgery* 119(1): 49-54
- "Vestibular Rehabilitation" (ed) Herdman SJ 2<sup>nd</sup> Edition (2000) F.A. Davis Company, Philadelphia
- Herdman SJ, Schubert MC, Das VE, Tusa RJ (2003) "Recovery of Dynamic Visual Acuity in Unilateral Vestibular Hypofunction" *Arch Otolaryngology Head Neck Surgery* 129: 819-824
- Horak FB, Jones-Rycewicz C, Black FO, Shumway-Cook A (1992) " Effects of vestibular rehabilitation on dizziness and imbalance" *Otolaryngology Head and Neck Surgery* 106: 175-180
- Kroenke K, Mangelsdorff AD (1989) "Common symptoms in ambulatory care: incidence, evaluation, therapy and outcome." *Am J Med* 86: 262-266
- Kroenke K, Lucas CA, Rosenberg ML (1992) "Causes of persistent dizziness: A prospective study of 100 patients in ambulatory care" *Ann Intern Med* 117: 898-904

Katsarkas A (1994) "Dizziness in Ageing: A retrospective study of 1194 cases"  
*Otolaryngol Head Neck Surg* 110: 296-301

Murray K, (2003) "Dizziness in a falls clinic population" National Ageing and Research Institute Report (NARI) *unpublished*

Schubert MC, Tusa RJ, Grine LE, Herdman SJ (2004) "Optimizing the Sensitivity of the Head Thrust Test for Identifying Vestibular Hypofunction" *Physical Therapy* 84 (2): 151-158.

Shumway-Cook A, & Horak FB (1990) "Rehabilitation strategies for patients with vestibular deficits" *Neurologic Clinics* 8: (2) 441-458

Sloane P, Blazer D, & George LK (1989) "Dizziness in a community elderly population"  
*Journal of American Geriatrics Society* 37 (2): 101-108

Sloane PD & Dallara J (1999) "Clinical research and geriatric dizziness: the blind men and the elephant" *Journal American Geriatrics Society* 47(1): 113-114

Sloane PD, Coeytaux RR, Beck RS, Dallara J (2001) "Dizziness: state of the science"  
*Annals of Internal Medicine* 134(9): 823-832

Strupp M, Arbusow V, Maag KP, Gall C, Brandt T (1998) "Vestibular exercises improve central vestibulospinal compensation after vestibular neuritis" *Neurology* 51: 838-844

Szturm T, Ireland DJ, Lessing-Turner M (1994) "Comparison of different exercise programs in the rehabilitation of patients with chronic peripheral vestibular dysfunction"  
*J Vestib Res* 4: 461-479

[www.dhs.vic.gov.au/about.htm](http://www.dhs.vic.gov.au/about.htm) Department of Human Services website

[www.mh.org.au](http://www.mh.org.au) Melbourne Health website

[www.onbalance.com](http://www.onbalance.com) NeuroCom International, Inc."Equitest" Balance System

[www.physiotherapy.asn.au](http://www.physiotherapy.asn.au) Australian Physiotherapy Association website

Yardley L, Beech S, Zander L, Evans T, Weinman J (1998) "A randomised controlled trial of exercise therapy for dizziness and vertigo in primary care" *Br J Gen Pract* 48: 1136-1140

## **APPENDIX A**

### **EMORY UNIVERSITY, Atlanta Georgia USA** ***Vestibular Rehabilitation: A Competency -Based Course***

#### **Tuesday, March 9, 2004**

- 8:00 – 10:00 Registration  
10:00 – 10:15 Introduction and orientation  
10:15 – 11:00 Lecture - Anatomy/ physiology of the vestibular system  
R. Tusa  
11:00 – 12:30 Lecture - Pathophysiology, etiology, signs and symptoms  
R. Tusa  
12:30 – 1:30 Lunch  
1:30 – 3:00 Lecture - Critical elements of the clinical examination  
N. Shepard  
3:00 – 3:30 Break  
3:30 – 5:00 Practicum 1 -Oculomotor examination all faculty  
5:00 – 6:30 Practicum 2 -Oculomotor videos all faculty  
6:30 – 9:00 Competency testing – Oculomotor examination – scheduled times  
all faculty

#### **Wednesday, March 10, 2004:**

- 7:30 – 9:00 Lecture - Vestibular function tests – caloric, rotary chair, posturography  
R. Tusa  
9:00 – 10:00 Practicum 3 -Vestibular function test - 3 cases  
all faculty  
10:00 – 10:30 Break and exhibit hall  
10:30 – 12:00 Lecture – Assessment of Balance and Gait  
S. Whitney  
12:00 – 1:30 Lunch and exhibit break  
1:30 – 3:00 Practicum 4 - Balance and gait assessment all  
faculty  
3:00 – 3:30 Break  
3:30 – 5:00 Lecture - BPPV – assessment and treatment of PC, AC, HC BPPV  
Clendaniel  
5:00 – 6:30 Practicum 5 -BPPV – assessment and treatment all faculty  
6:30 – 8:30 Competency testing – Balance and Gait - scheduled all  
faculty

#### **Thursday, March 13, 2004:**

- 7:30 – 9:00 Practicum 6 -BPPV nystagmus all faculty  
9:00 – 9:30 Lecture – Case study: BPPV T.  
Denham  
9:30 – 10:30 Lecture – Cervicogenic Dizziness  
R. Landel  
10:30 – 11:00 Break and Exhibit Hall  
11:00 – 12:00 Lecture – Focused assessment of patients with vestibular hypofunction  
S. Herdman  
12:00 – 2:00 Lunch and exhibit break

- 2:00 – 3:00 Lecture - Treatment theory, goals, development of plan of care  
S. Herdman
- 3:00 – 4:00 Lecture - Treatment progression and decision making  
T. Denham
- 4:00 – 5:00 Break and study
- 5:00 – 7:30 Competency testing – BPPV – scheduled  
all faculty

**Friday, March 14, 2004:**

- 8:00 – 8:50 Practicum 7 - Treatment procedures for vestibular loss  
all faculty
- 9:00 – 9:50 Lecture – Case study: Decision-making - UVL  
S. Herdman
- 10:00 – 10:30 Break and Exhibits
- 10:30 – 11:20 Lecture – Case studies: Decision-making - BVL  
R. Clendaniel
- 11:30 – 12:30 Lecture – Central Vestibular Disorders  
M. Schubert
- 12:30 – 1:30 Lunch and exhibit break
- 1:30 – 2:30 Lecture – use of habituation exercises in central and non-vestibular lesions  
L Gillig
- 2:30 – 3:30 Lecture - Psychological problems and the patient with dizziness  
R. Tusa
- 3:30 – 4:00 Break
- 4:00 – 6:00 Competency testing –UVL/ BVL treatments – scheduled  
all faculty

**Saturday, March 15, 2004:**

- 8:00 – 9:00 Lecture – Management of the Child with Vestibular Dysfunction  
R. Rine
- 9:00 – 10:00 Lecture – Management of the Elderly Person with Vestibular Dysfunction  
C. Coogler
- 10:00 – 10:30 Break
- 10:30 – 11:30 Lecture – PT Diagnosis in Vestibular Rehabilitation  
S. Herdman
- 11:30 – 12:30 Question period
- 12:30 – 2:00 Lunch and Study
- 2:00 – 3:00 Video examination
- 3:00 – 4:30 Written examination
- 4:30 Adjourn, Certificates of Attendance Available; Certificate of Competency  
mailed in 4 weeks